Q52 Omni User Manual

Reference : WI_DEV_ASSM_UGD_005
Revision: 001
Date : December 12, 2008

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Revision History

Revision	Date	Update
001	December 12, 2008	Creation

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1 Scope

1.1 Introduction

This document explains how to install Q52 Omni hardware and the software, and defines procedures of connecting the installed Q52 Omni to OrbPerform.

1.2 Revision

Release	Date	Summary of Changes
001	18 MAR 2008	Initial draft
002	22 APR 2008	Update of inputting the Serial ID, Rx ID and TX ID Add procedures of sending email with OrbPerform
003	23 APR 2008	Update the latency test
004	4 DEC 2008	Add procedures of operating GPS and DSP debug mode

1.3 References

	TITLE	Document number	revision
01	ORBCOMM ORBPerform User Guide	(n/a)	1.5
02	AT Commands Interface Guide for Open AT Firmware v7.3	WM_DEV_OAT_UGD_079	006

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2 Installation

2.1 System Requirements

The below is the system requirement of hardware and software for the Q52 Omni.

Category	Type	Requirement
Hardware	Computer	A computer which is equipped with 1 UART connector
	Target board	A Tina board which is equipped with a Q52 Omni Wireless CPU® (ES1)
Software	Test environment OS	Microsoft Windows XP or later version
	Software tools	DWLWin 4.1.6.6 or later version – A Wavecom software tool which is used to download the WMP100 firmware to the target board.
		Hyper-terminal – A standard Window application to download Q52 Omni plug-in and DSP loader to the target board.
		ORBPerform – A Window application that outputs ORBCOMM data packet to the UART of the target board
	Software binaries	Version of WMP firmware: R73_00gg.WMP100 2085704 112708 14:08
		Version of Q52 Omni plug-in: GSAT V2.0.3.16 5-December-2008 Filename: ads_gs_plugin_1MB+(v.2.03.16).wpb
		Version of DSP loader: 1.5C Filename: GSAT_1_5C.ldr

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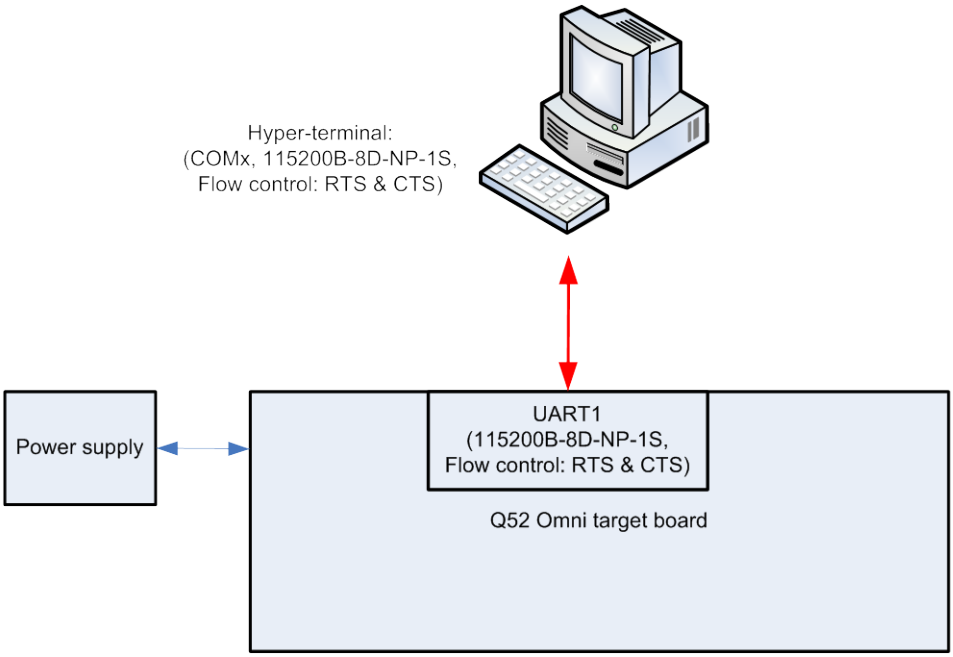
2.2 Installation of Hardware

2.2.1 Procedure

Step 1: Connect the UART1 of Q52 Omni to the COMx of a computer.

Step 2: Power on Q52 Omni.



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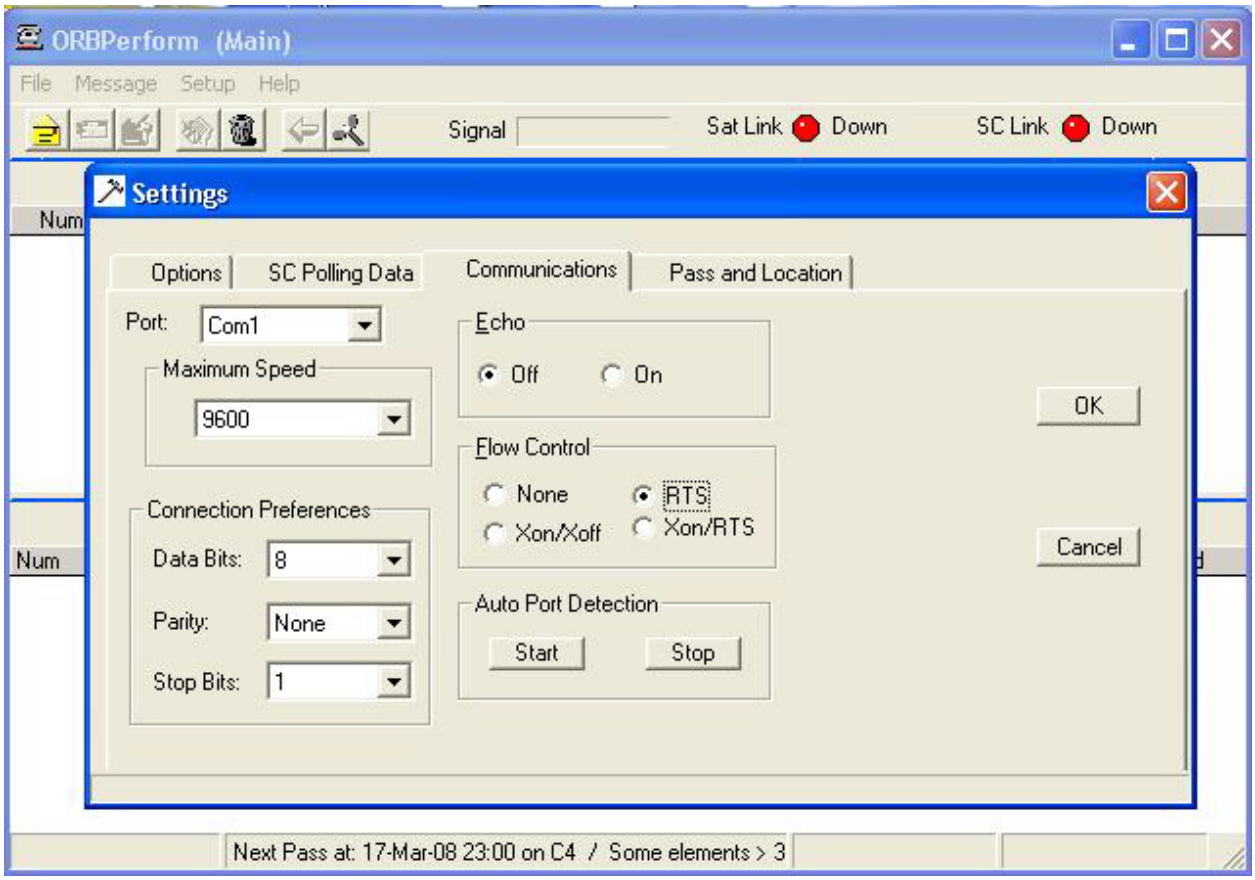
2.3 Software Installation

2.3.1 Precaution

Step 1: Launch the ORBPerform. The port settings dialog box below opens.



Step 2: Quit the ORBPerform to release COMx of the computer.

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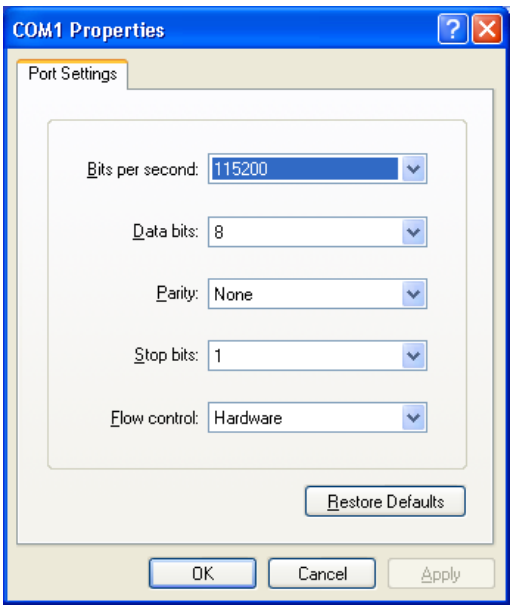
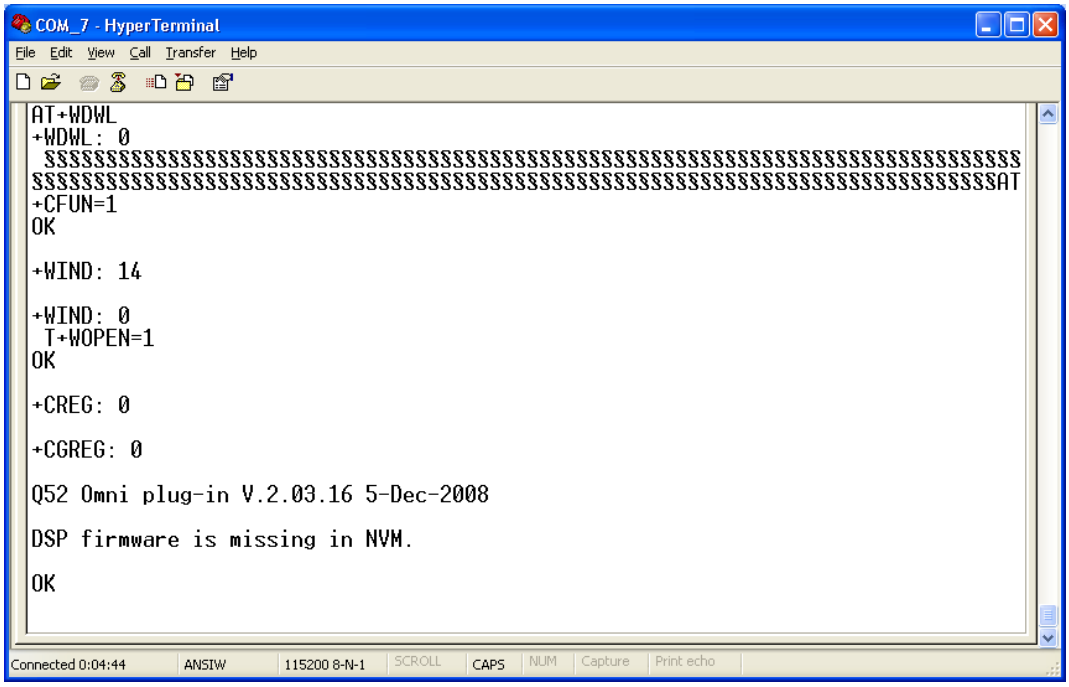
2.3.2 Installation Procedure

Step 1: Download the Open AT® firmware to the target board with DWLWin, if necessary.

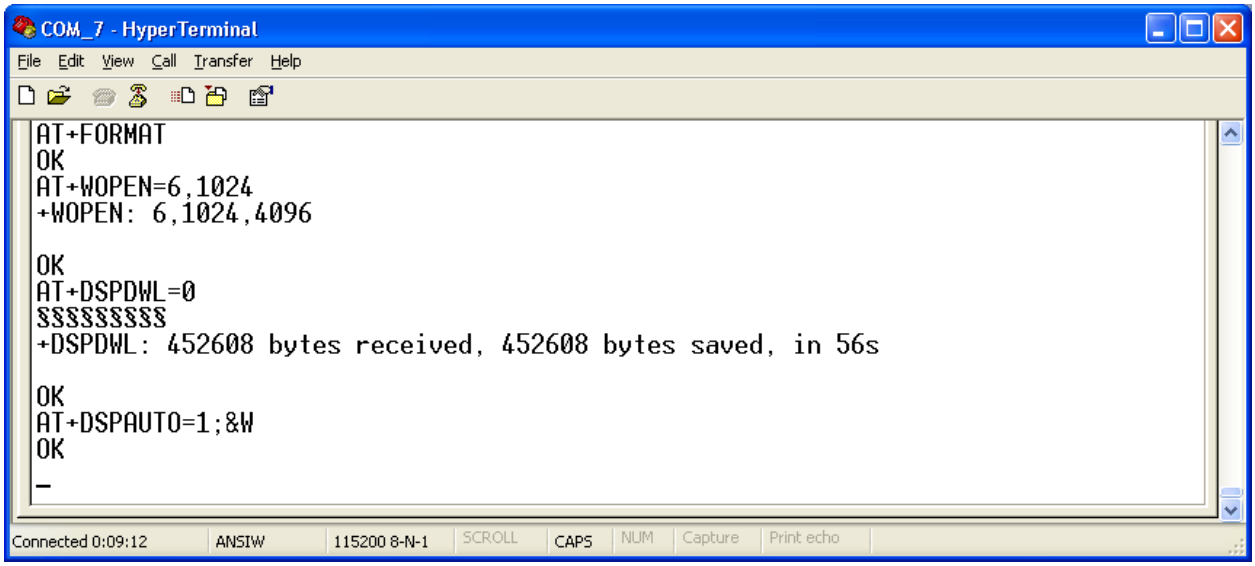
Step 2: Monitor UART1 of the board using Hyper-terminal. Ensure that the Hyper-terminal settings reflect those displayed below:



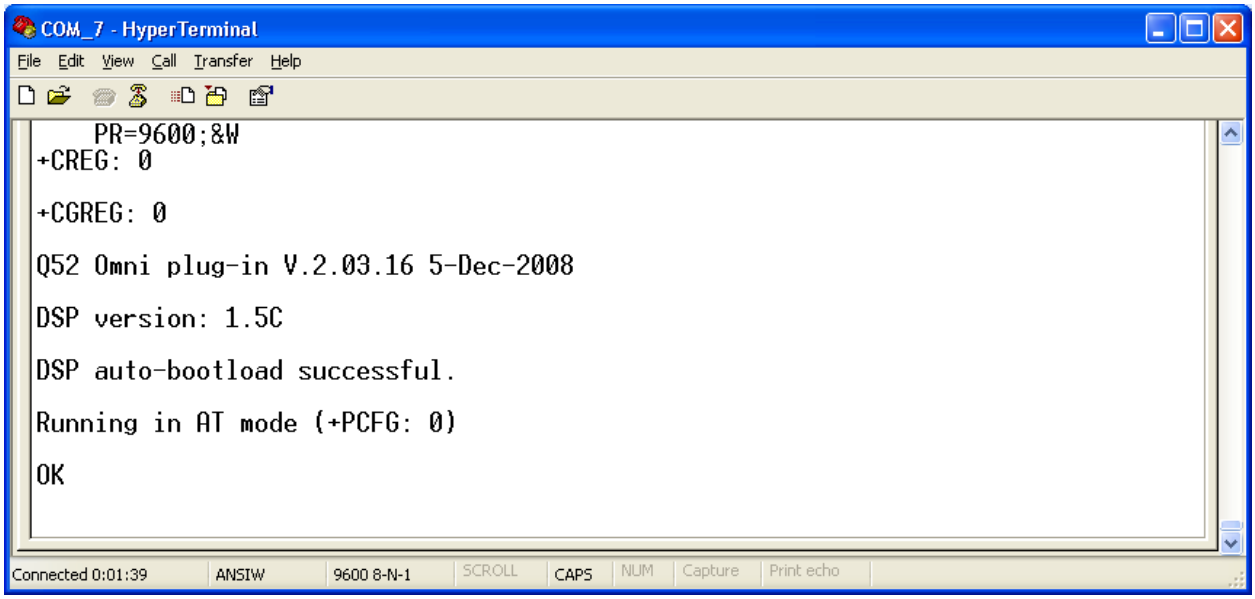
Step 3: At the Hyper-terminal, enter "**AT+WDWL**" in order to download Q52 Omni plug-in to the target board. After the complete of the download, enter "**AT+CFUN=1**" and "**AT+WOPEN=1**", in turns.


COM_7 - HyperTerminal
File Edit View Call Transfer Help
AT+WDWL
+WDWL: 0
SSSS

Step 4: Enter "**AT+FORMAT**", "**AT+WOPEN=6,1024**" and "**AT+DSPDWL=0**", in turns, to download the DSP loader. After the completion of the download, enter "**AT+DSPAUTO=1;&W**"



Step 5: Enter "**AT+IPR=9600;&W**", change the baud rate of the Hyper-terminal to be 9600 and reset the target board.



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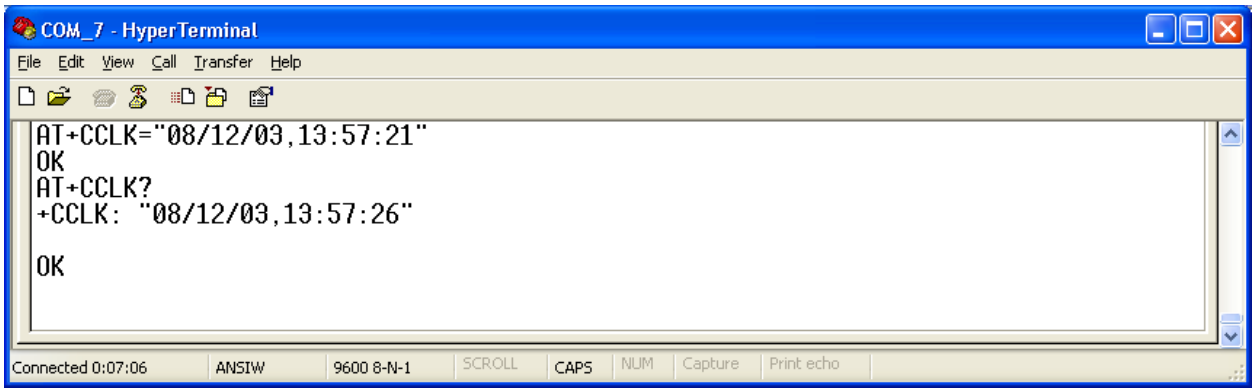
Step 6: Set up the real time clock of the target board. For example, if the current time is 13:57:21 and today is 3 December 2008, enter "**AT+CCLK="08/12/03,13:57:21"**". The status of the clock can be checked by "**AT+CCLK?"**.



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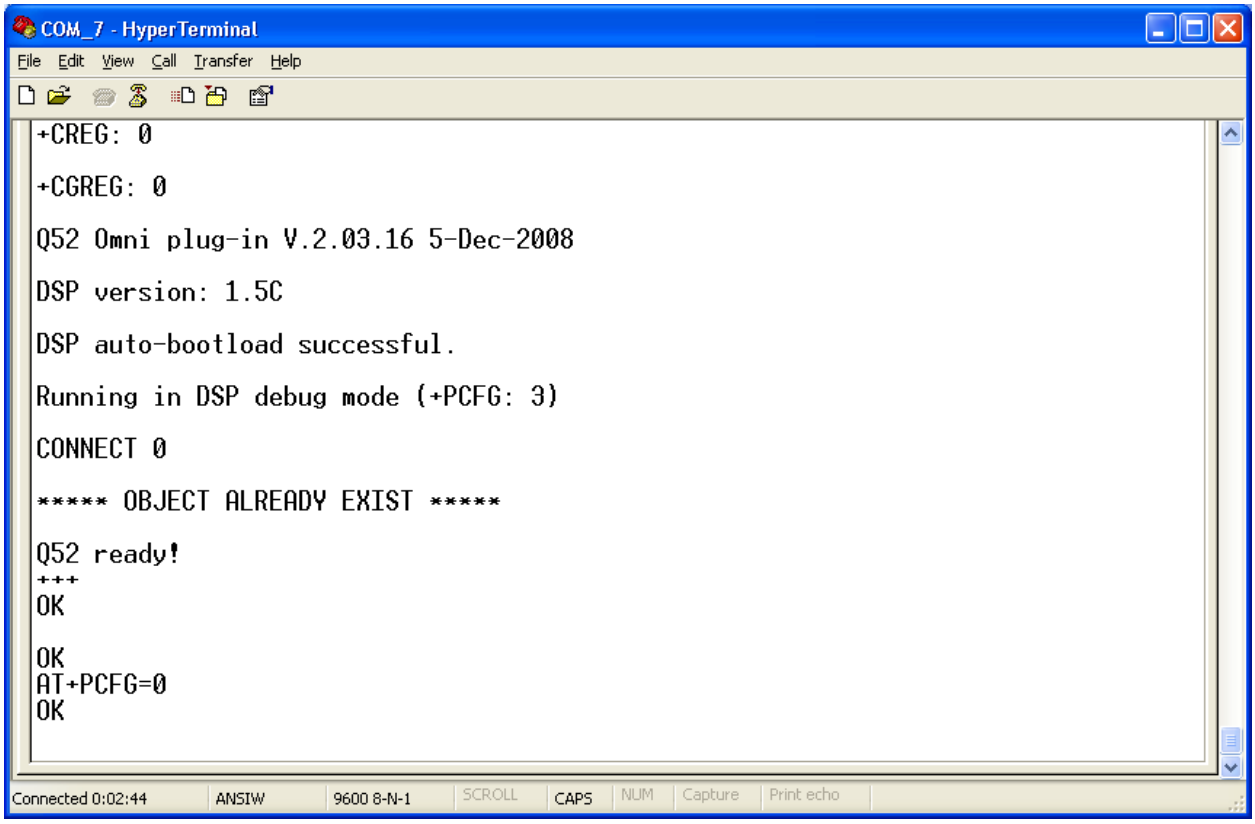
3 Performing Satellite Data Communications

3.1 Precaution

Step 1: Connect a satellite antenna to the target board.

Step 2: Power on the board.

Step 3: If the board has been started up in satellite debug mode (+PCFG: 3), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0). Otherwise, go to the next step.



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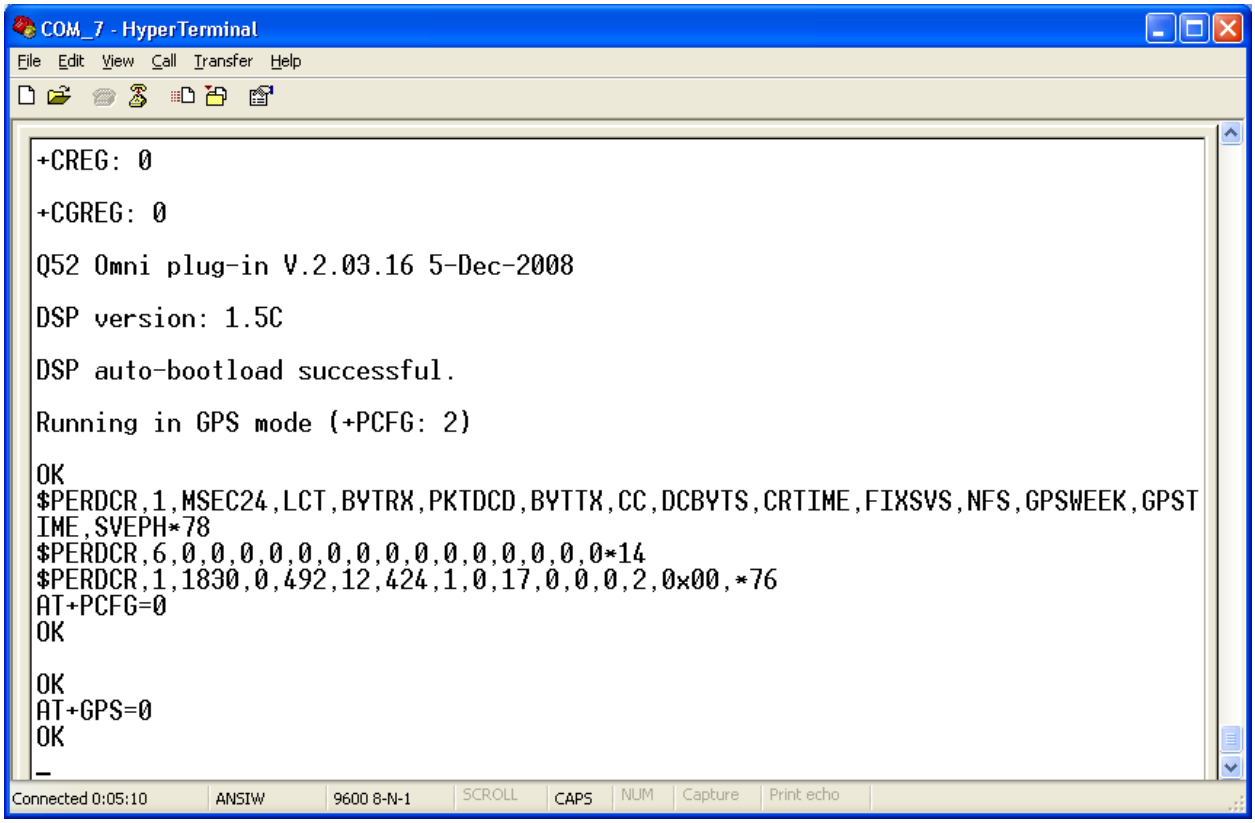
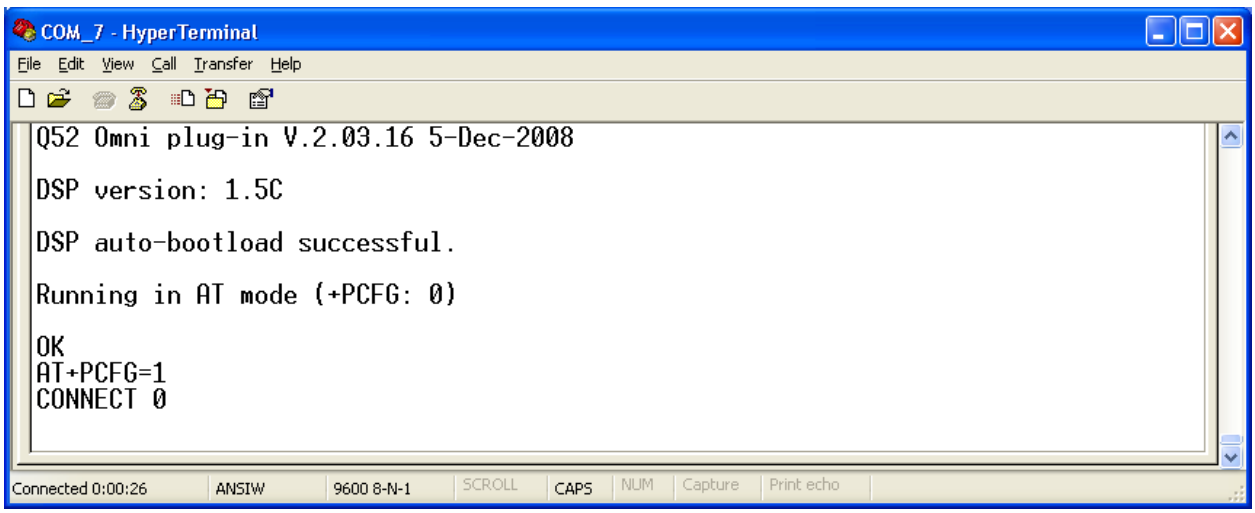
Step 4: If the board has been started up in NMEA command mode (+PCFG: 2), enter "**AT+PCFG=0**" to entrance AT command mode (+PCFG: 0). Enter "**AT+GPS=0**" to turn off the GPS module.



3.2 Procedure

Step 1: If the board has been started up in Orbcomm mode (+PCFG: 1), go to Step 4.

Step 2: Enter "**AT+PCFG=1**" to set the target board into Orbcomm mode.


COM_7 - HyperTerminal
File Edit View Call Transfer Help
Q52 Omni plug-in V.2.03.16 5-Dec-2008
DSP version: 1.5C
DSP auto-bootload successful.
Running in AT mode (+PCFG: 0)
OK
AT+PCFG=1
CONNECT 0
Connected 0:00:26 ANSIW 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

Step 3: Exit the Hyper-terminal to disconnect the port connection from the target board.

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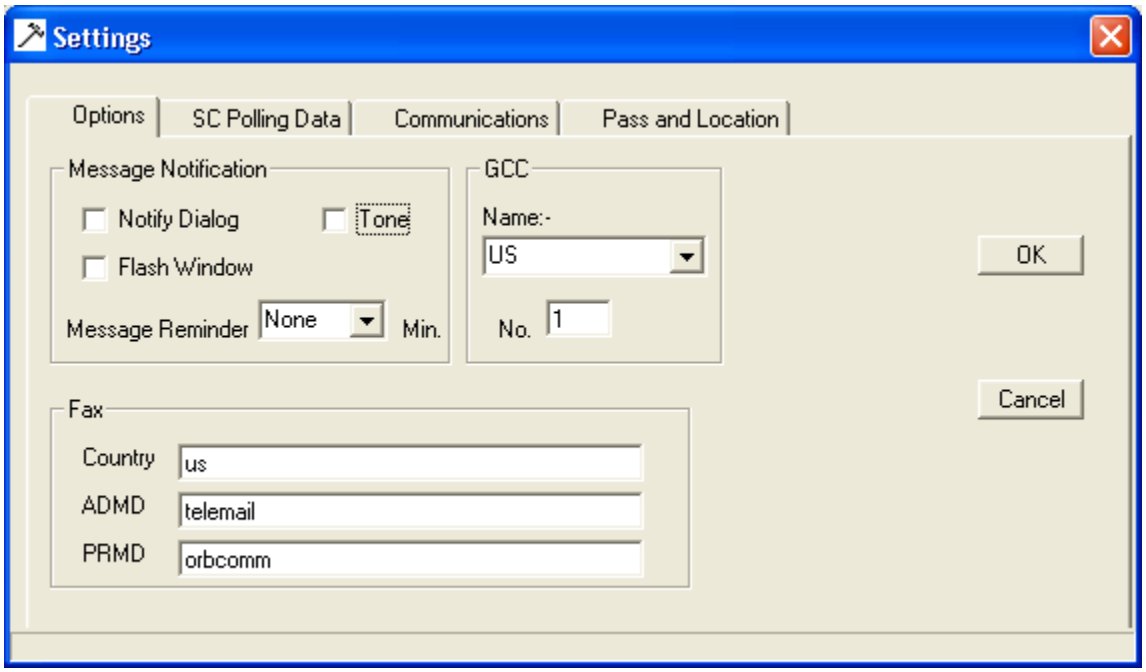
Step 4: Launch the ORBPerform.

Step 5: Click "**Setup**" > "**Parameters**" > "**Options**". At GCC, select the closest GCC. In US, please select **US** and No. **1**. Click "**OK**".

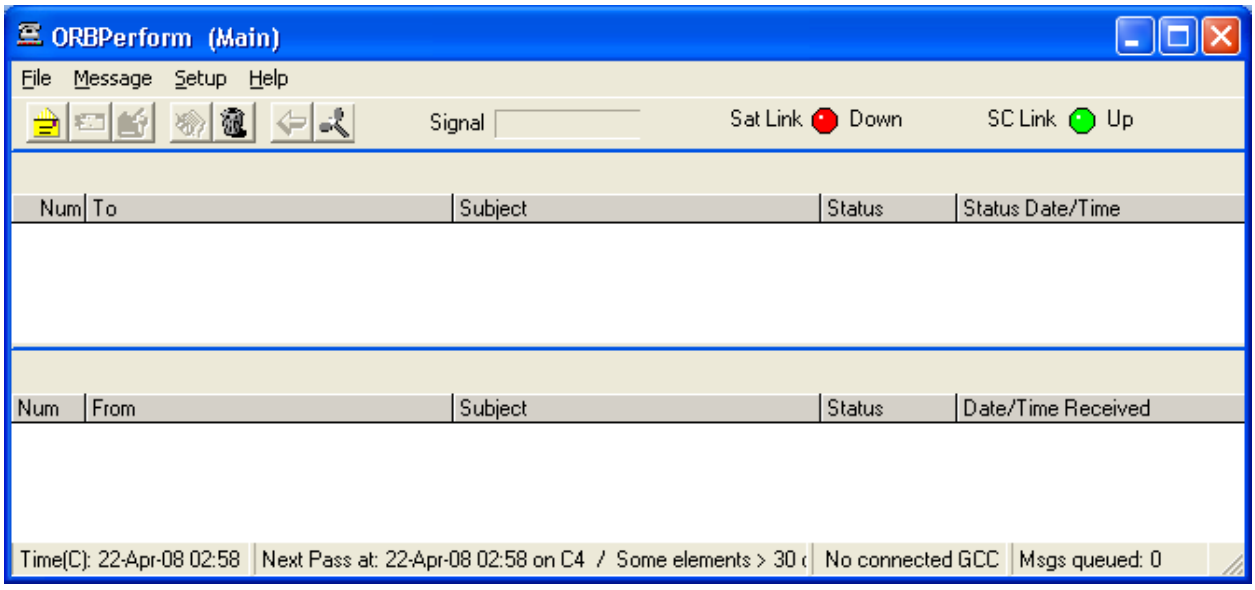


3.3 Connecting to ORBPerform and Satellites

Power on the target board.

3.3.1 Result: SC Link

If ORBPerform can communicate with the target board, the SC Link will be green and up.



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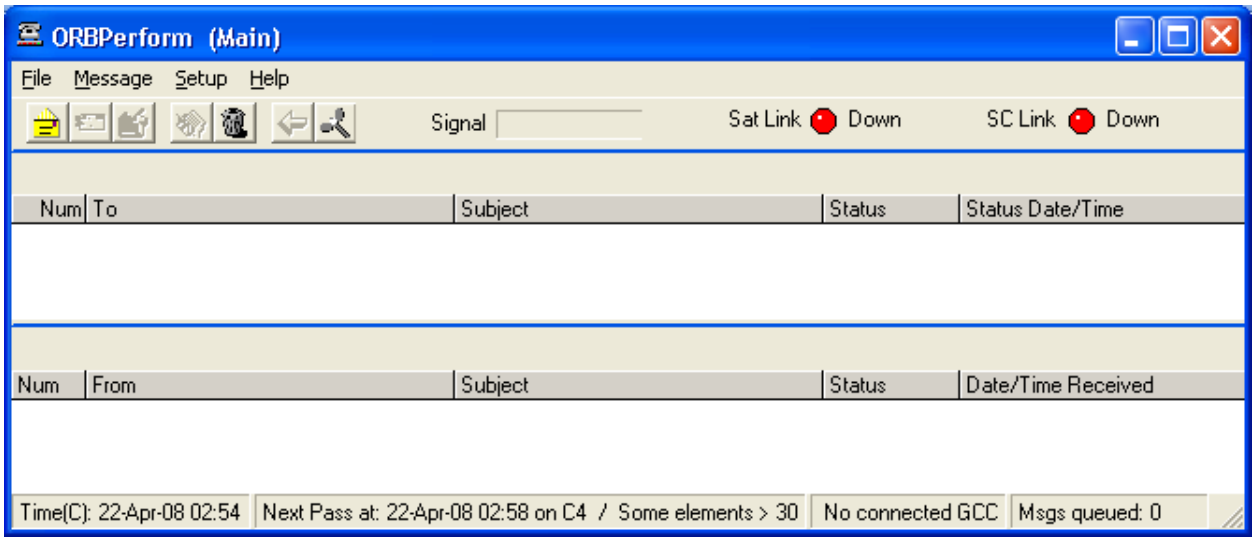
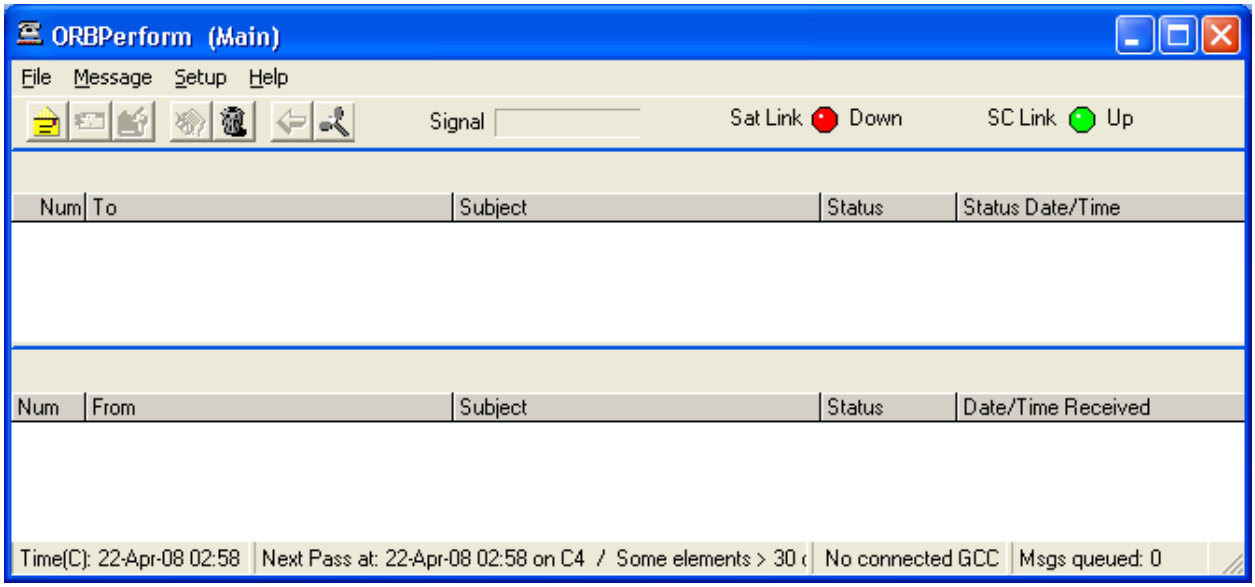
If ORBPerform cannot communicate with the target board, the SC Link will be red and down.


ORBPerform (Main)
File Message Setup Help
Signal
Sat Link Down
SC Link Down
Num To Subject Status Status Date/Time
Num From Subject Status Date/Time Received
Time(C): 22-Apr-08 02:54
Next Pass at: 22-Apr-08 02:58 on C4 / Some elements > 30
No connected GCC
Msgs queued: 0

3.3.2 Result: Sat Link

If ORBPerform cannot communicate with the satellites, the Sat Link will be red and down.


ORBPerform (Main)
File Message Setup Help
Signal
Sat Link Down
SC Link Up
Num To Subject Status Status Date/Time
Num From Subject Status Date/Time Received
Time(C): 22-Apr-08 02:58
Next Pass at: 22-Apr-08 02:58 on C4 / Some elements > 30
No connected GCC
Msgs queued: 0

Otherwise, the Sat Link will be green and up. Besides, the Signal bar will display the signal strength as shown in the following figure.

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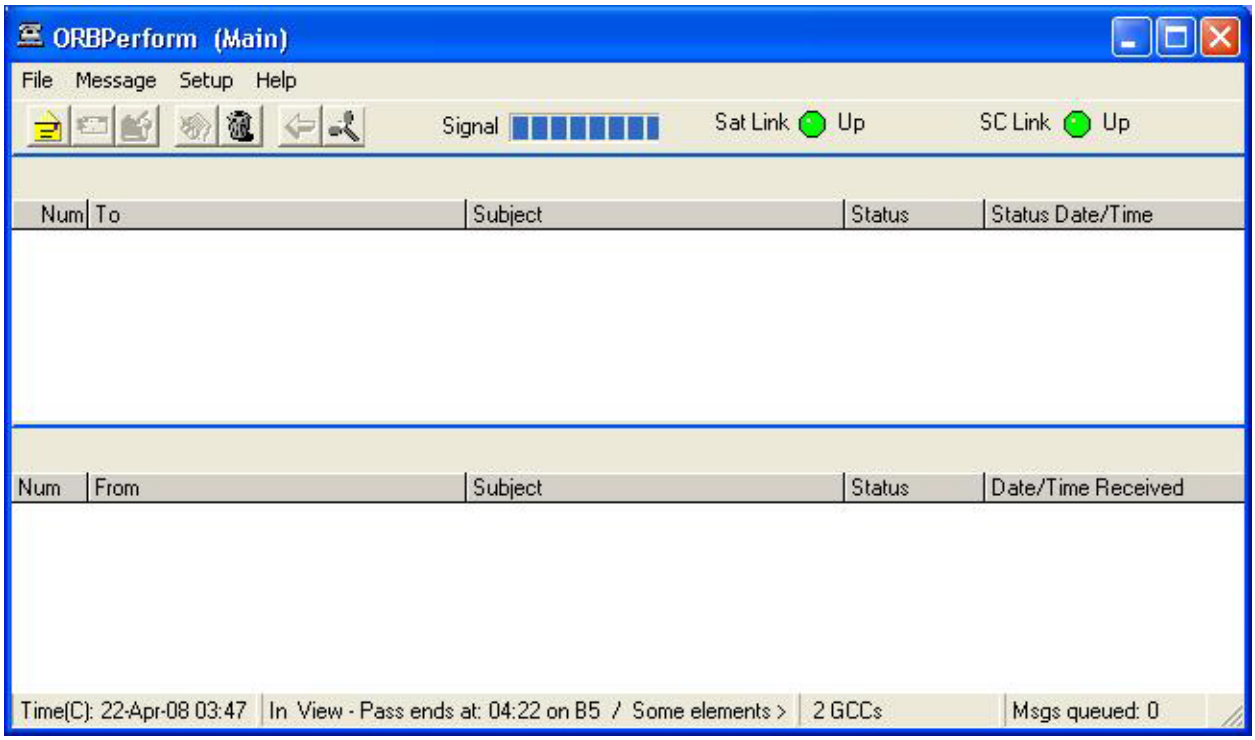
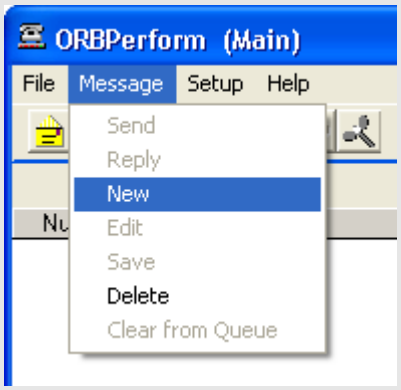

ORBPerform (Main)
File Message Setup Help
Signal
Sat Link Up
SC Link Up
Num To Subject Status Status Date/Time
Num From Subject Status Date/Time Received
Time(C): 22-Apr-08 03:47
In View - Pass ends at: 04:22 on B5 / Some elements >
2 GCCs
Msgs queued: 0

3.4 Latency Test

Step 1: Click “Message” > “New”	
Step 2: At the “To” field, hold “Shift” key of the keyboard and enter “123per”	

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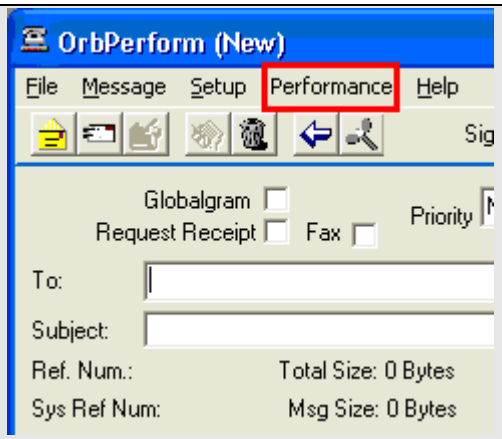
After that, a new pull-down menu “Performance” will appear.	

Step 3: Click “**Performance**” > “**Setup**” > “**SC-Originated**”

Set the "**Interval**” field to be greater than **0** Min and the “**Max No. of Queued Msgs**” field to be greater than **1**.

In the “**Test Name**” field, enter a test name, and in the “**Msg. Type**” field select the type of latency: **message** or **report**.

In the “**Session Msg Duration**” field, set the duration to be greater than **6** mins. Session duration is used as a standard benchmark to measure the performance: "X% of total messages is transmitted in 6 minutes." It will be displayed in a performance chart that is generated by OrbPeform.

Select all the satellite planes in the "**Available**" field. Click "**ADD**", '**Update**' and '**OK**', in turns.

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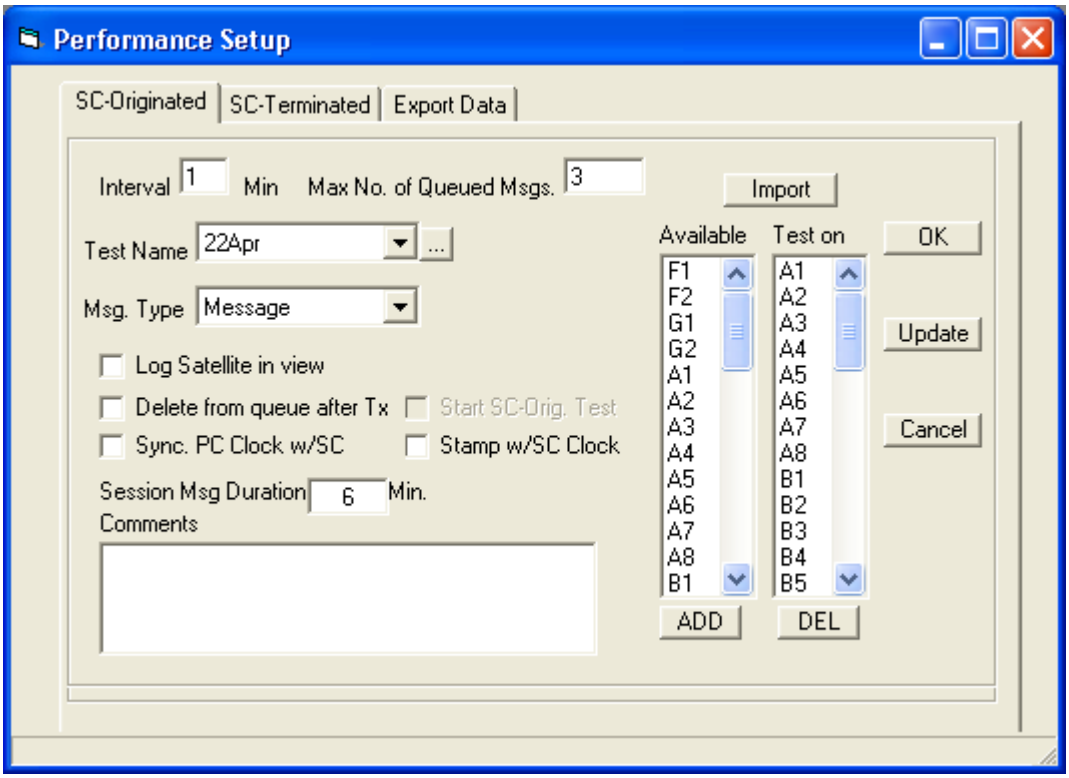
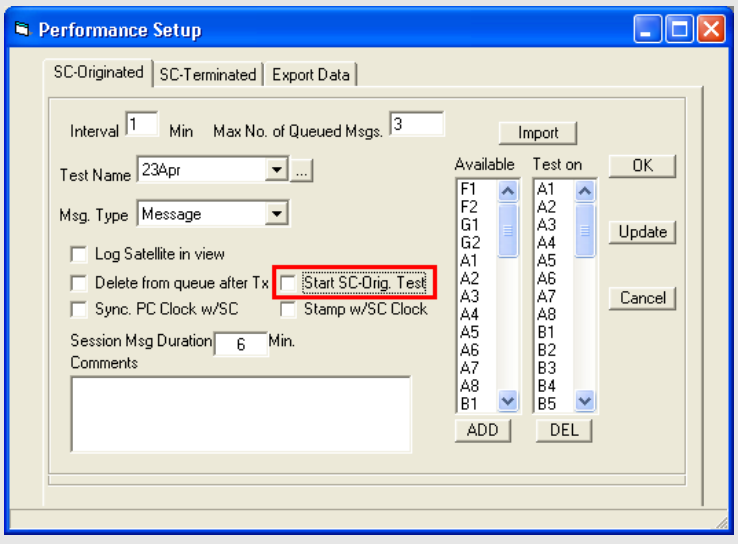


Step 4: In the "To" field, enter the OR id "1". In the case of the SCO Message latency test, fill in the fields of Subject and Body accordingly.	**Error! Objects cannot be created from editing field codes.**

Step 5: Click "**Performance**" > "**Setup**" > "**SC-Originated**"

Tick the "Start SC-Orig. Test" checkbox.	

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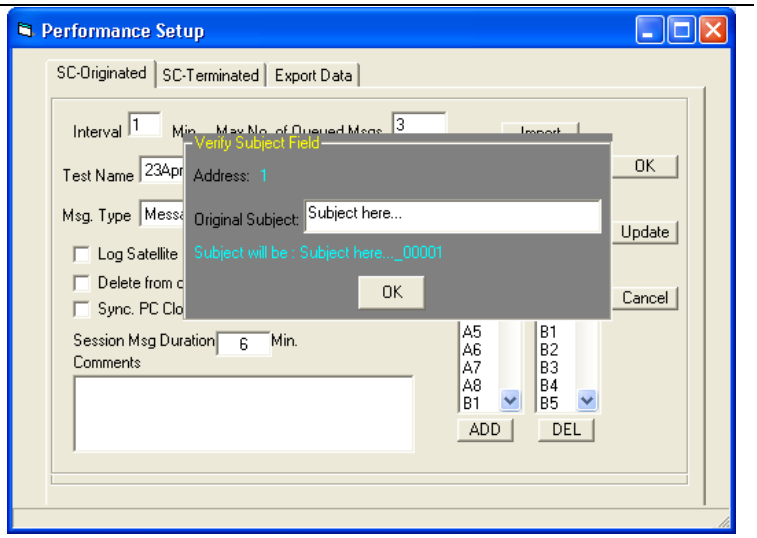
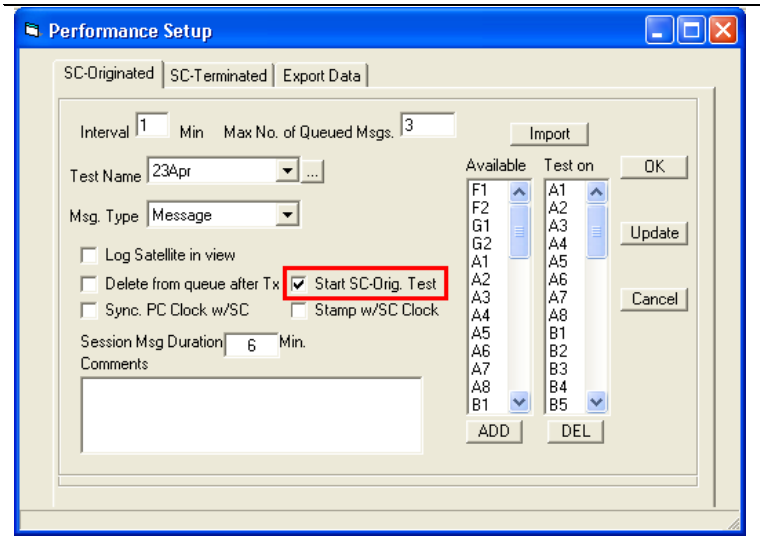
Click OK.	
The Start SC-Orig. Test is selected.	

Step 6: Click “File” > “TestStatus”	**Error! Objects cannot be created from editing field codes.**

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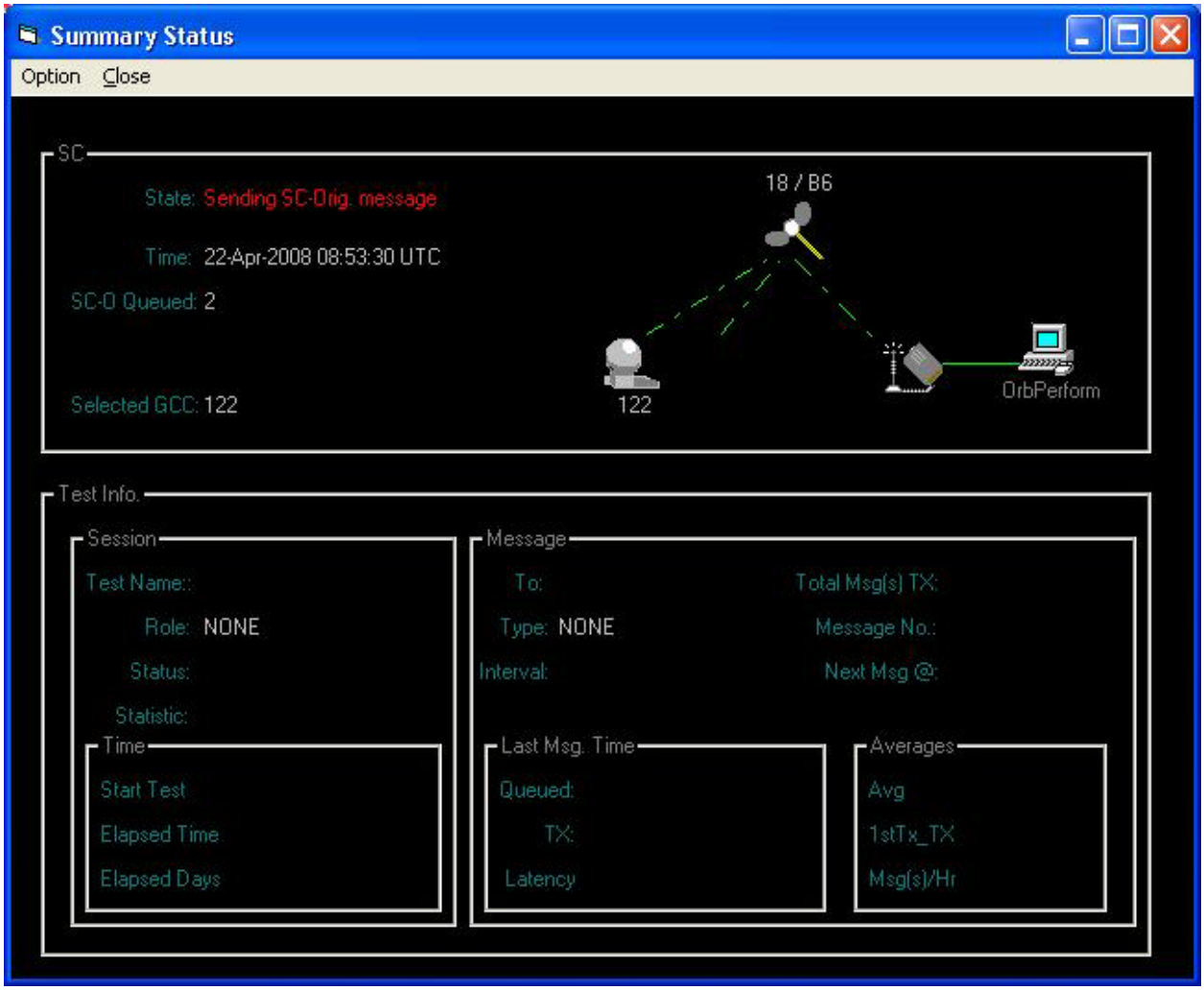
3.4.1 Result: Summary Status

A black window with the performance status will be displayed.



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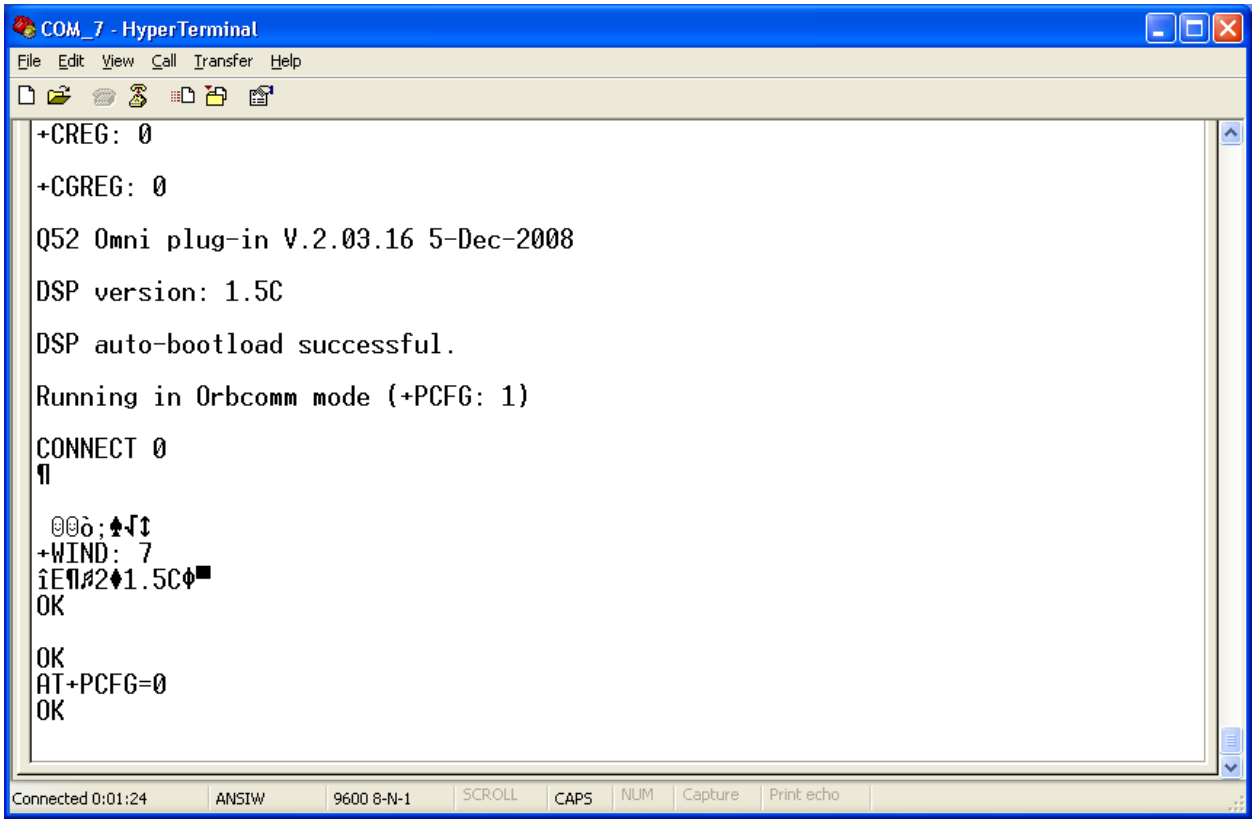
4 Performing GSM/GPRS Functions

4.1 Precaution

Step 1: Connect a GSM antenna to the target board.

Step 2: Power on the board.

Step 3: If the board has been started up in Orbcomm mode (+PCFG: 1), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0). Otherwise, go to the next step.



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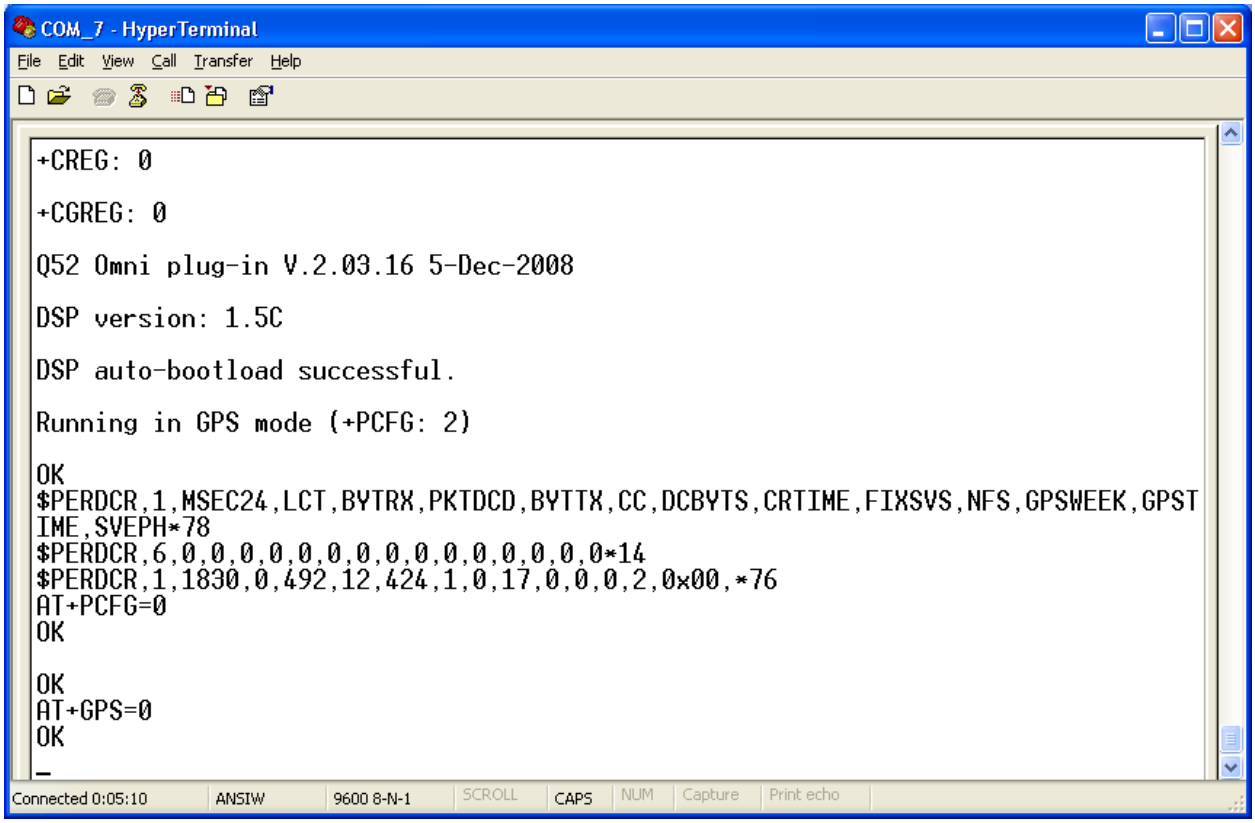
Step 4: If the board has been started up in NMEA command mode (+PCFG: 2), enter "**AT+PCFG=0**" to entrance AT command mode (+PCFG: 0). Enter "**AT+GPS=0**" to turn off GPS. Otherwise, go to the next step.



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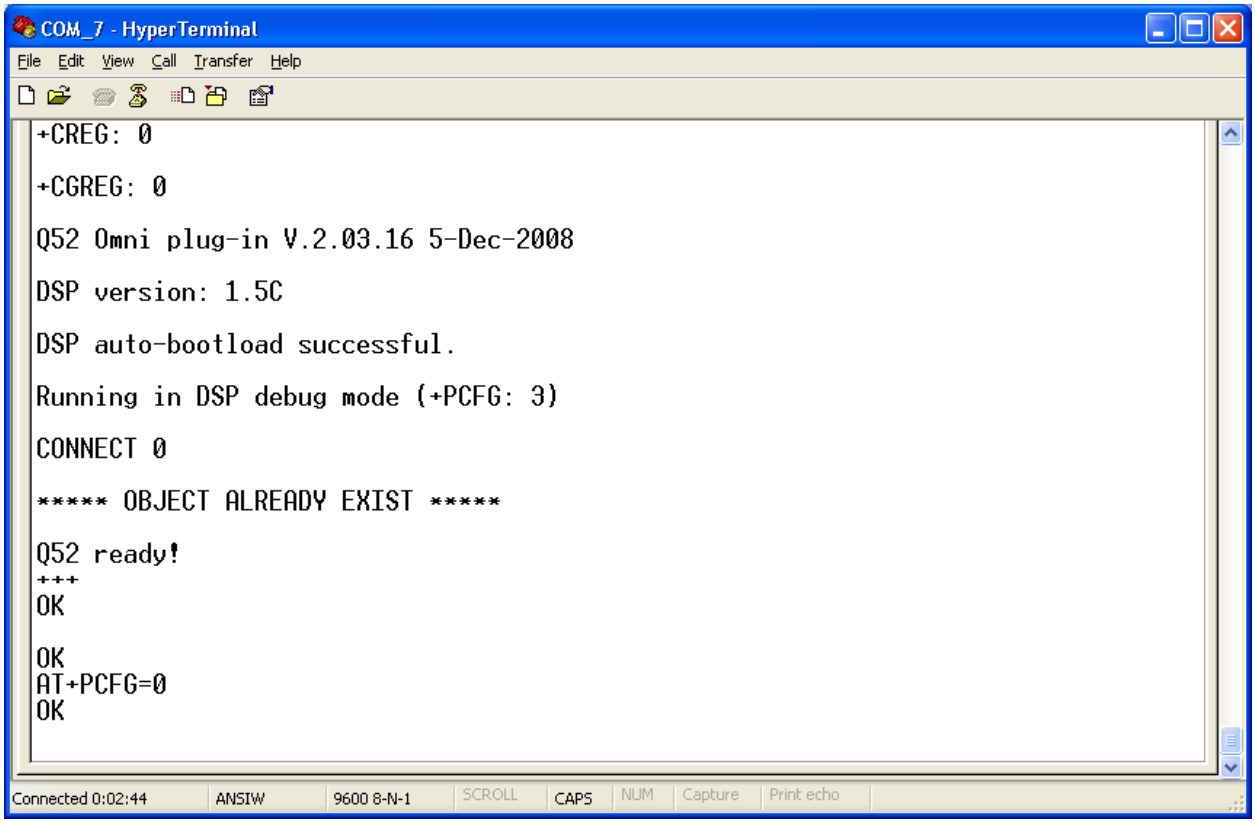
Step 5: If the board has been started up in satellite debug mode (+PCFG: 3), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0).



4.2 Performing GSM/GPRS Functions

The target board running in AT command mode (+PCFG: 0) supports various GSM/GPRS commands. Further details can be referred to the AT Commands Interface Guide.

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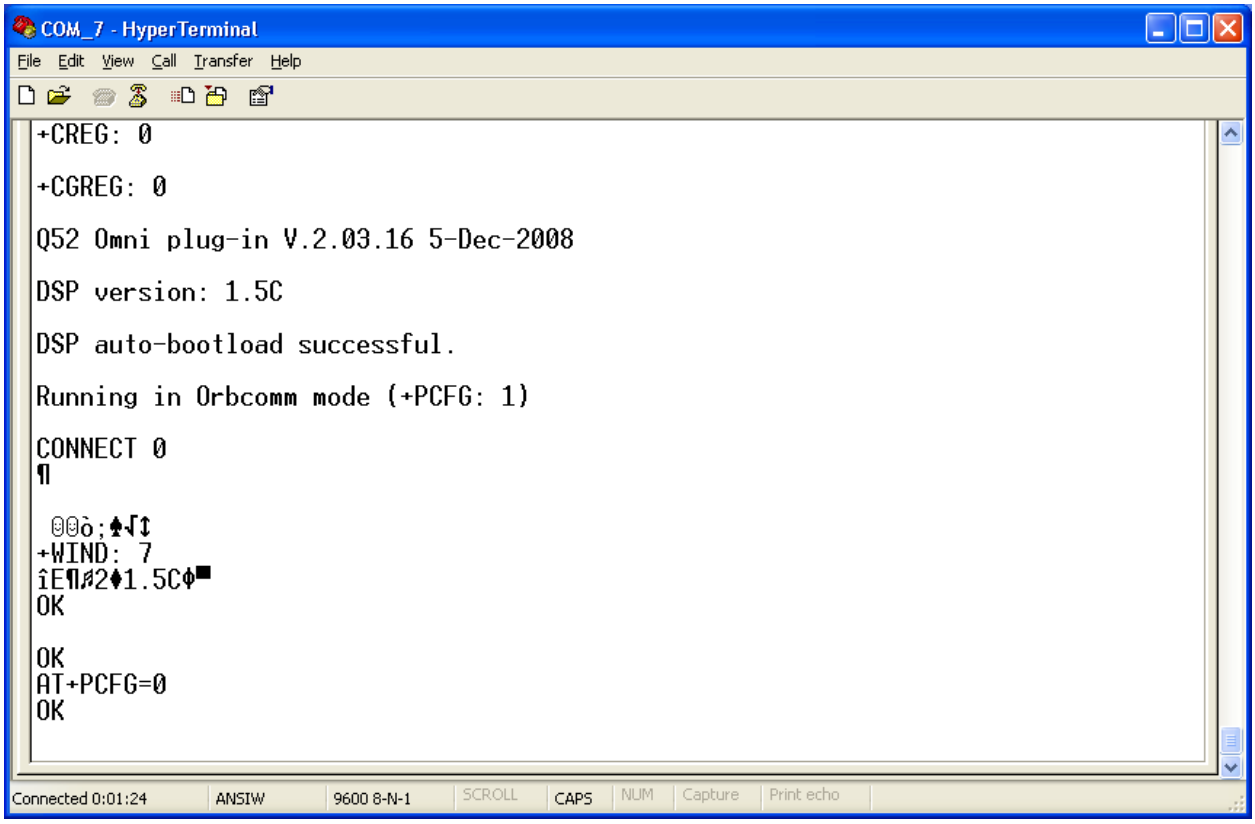
5 Performing GPS Functions

5.1 Precaution

Step 1: Connect a GPS antenna to the target board.

Step 2: Power on the board.

Step 3: If the board has been started up in Orbcomm mode (+PCFG: 1), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0). Otherwise, go to the next step.



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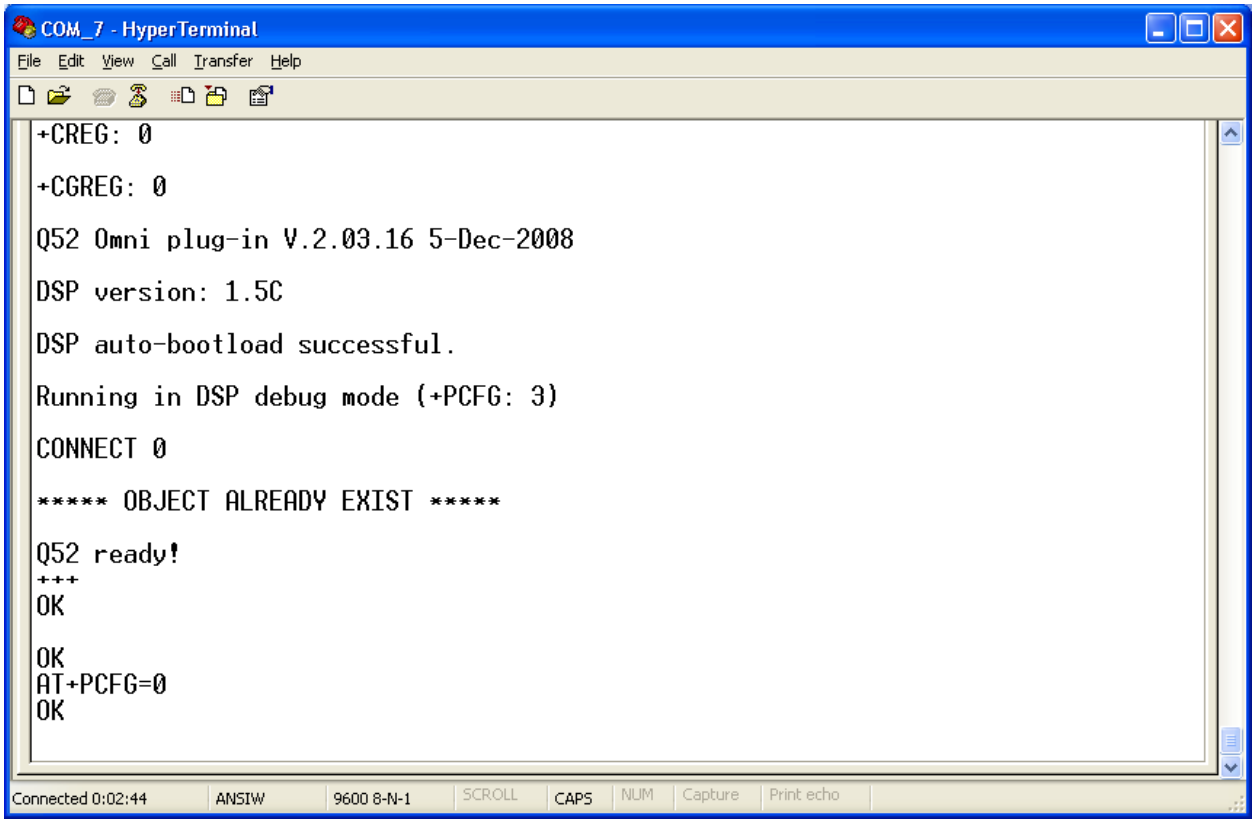
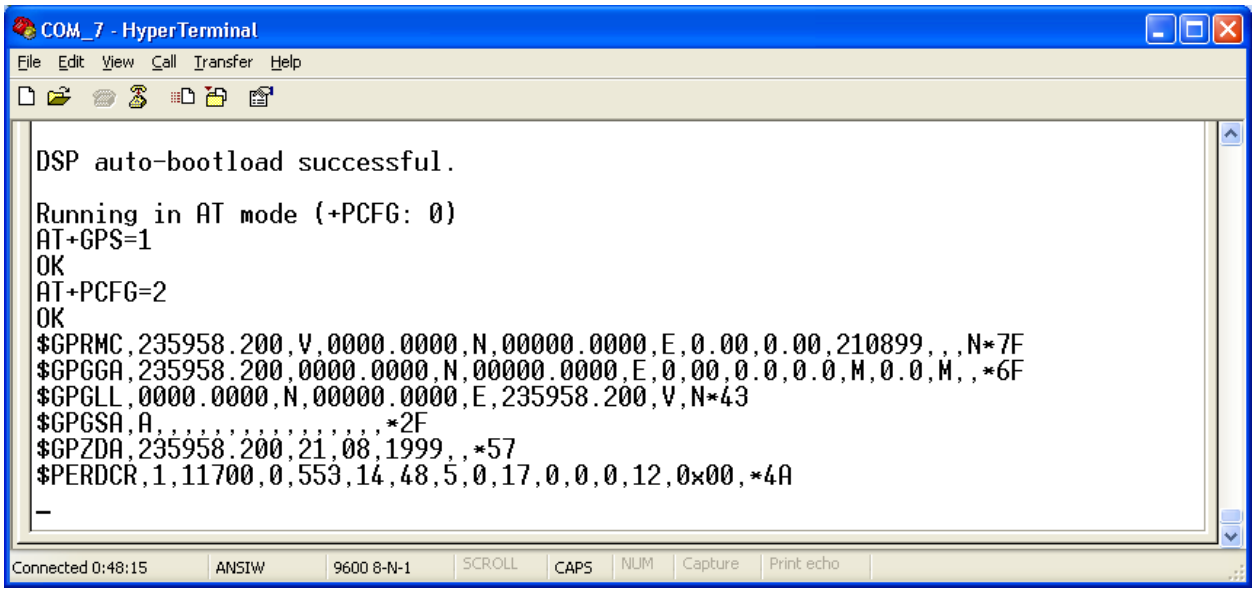
Step 4: If the board has been started up in satellite debug mode (+PCFG: 3), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0).



5.2 Procedure

Step 1: If the board has been started up in NMEA command mode (+PCFG: 2) but does not output NMEA frame, enter "**AT+GPS=1**" to turn on the GPS module. Go to Step 2:

Step 2: Enter "**AT+GPS=1**" and "**AT+PCFG=2**".



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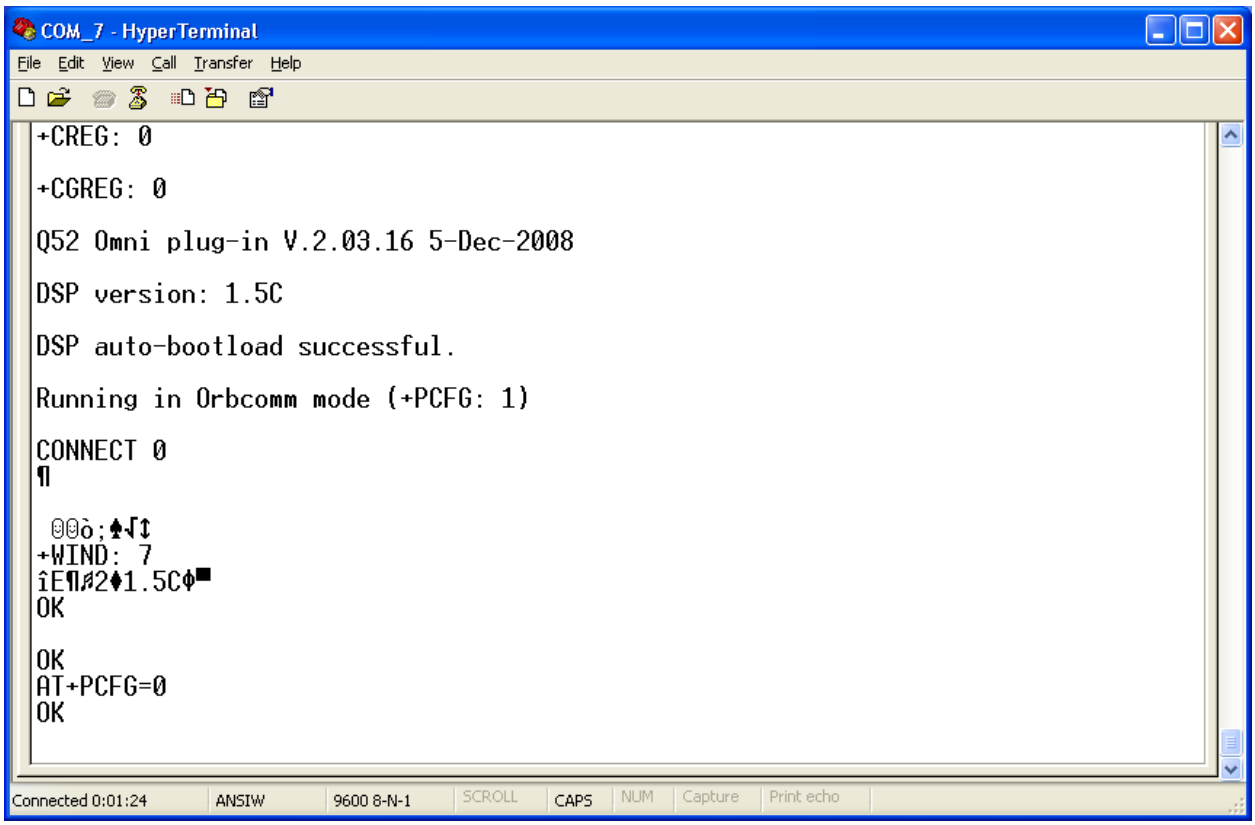
6 Performing Satellite Debug

6.1 Precaution

Step 1: Power on the target board.

Step 2: If the board has been started up in Orbcomm mode (+PCFG: 1), enter "+++" and "**AT+PCFG=0**", in turns, to entrance AT command mode (+PCFG: 0). Otherwise, go to the next step.



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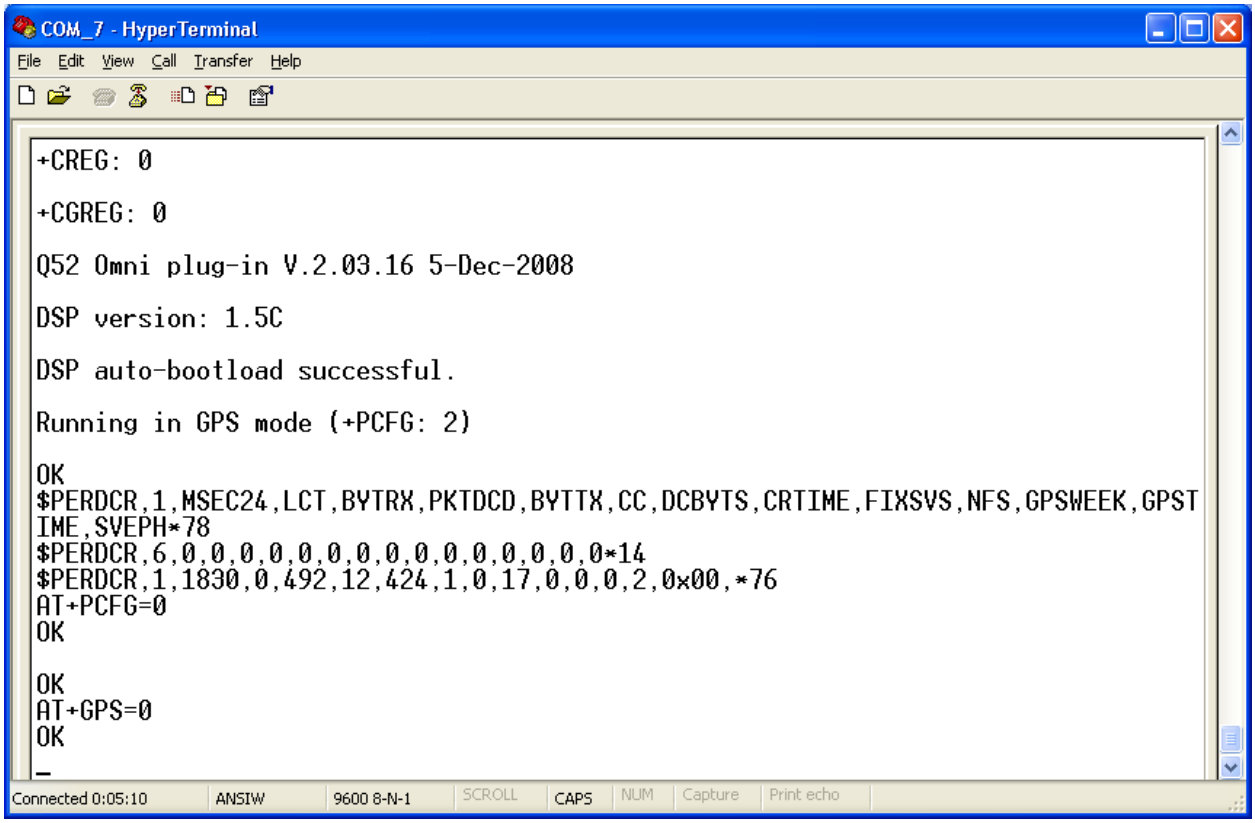
Step 3: If the board has been started up in NMEA command mode (+PCFG: 2), enter "**AT+PCFG=0**" to entrance AT command mode (+PCFG: 0). Enter "**AT+GPS=0**" to turn off GPS.



6.2 Procedure

Step 1: If the board has been started up in satellite debug mode (+PCFG: 3), go to Step 2.

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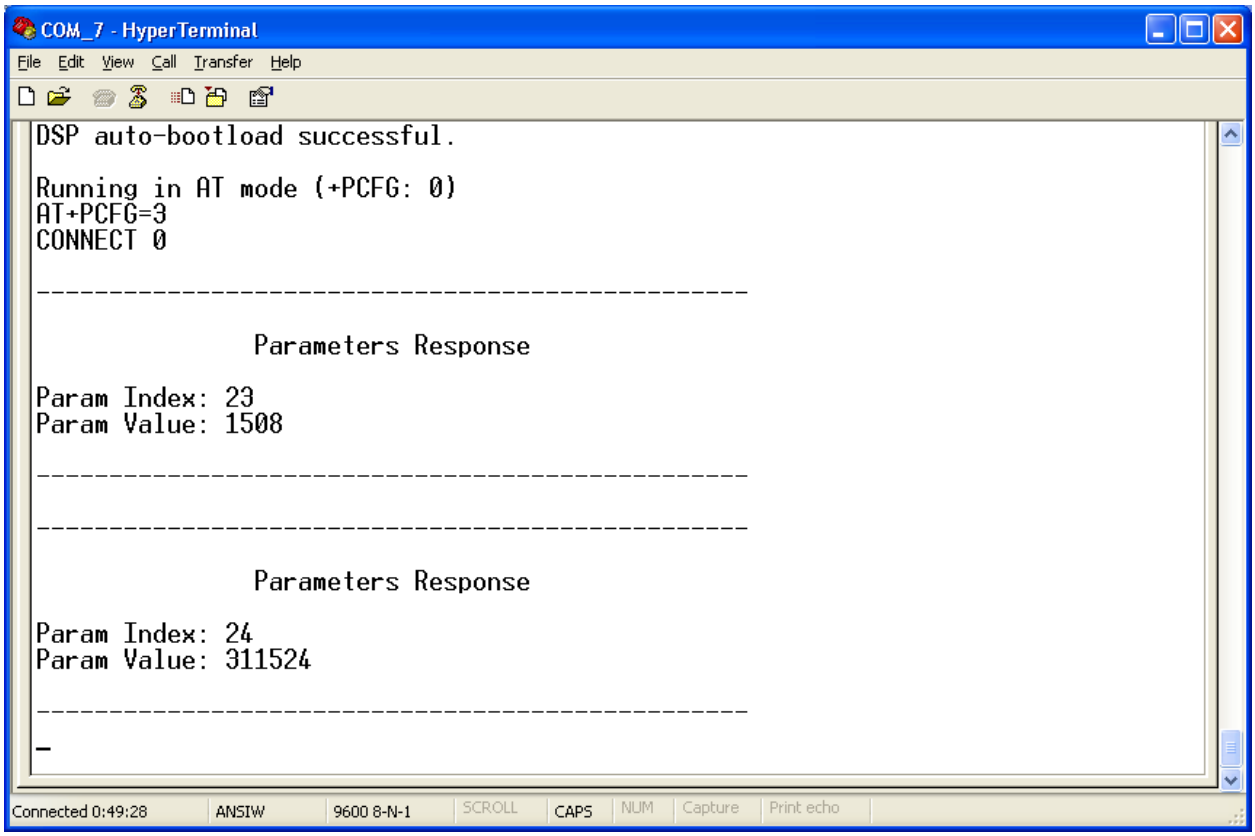
Step 2: Enter "**AT+PCFG=3**".



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